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EXAMINER	
LAO, LUN S	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 07/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/695,457	KHAN ET AL.	
	Examiner	Art Unit	
	Lun-See Lao	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30-39, 46--64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30-39 and 46-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *05-11-2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. This action is in response to the amendment filed on 05-11-2006. Claims 1-29 and 40-45 have been cancelled, claims 30-32, 34-38 and 46 have been amended and claims 47-64 have been added. Claims 30-39 and 46-64 are pending.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05-11-2006 has been entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 30 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claimed limitation "representing the audio waveform with a string of codes from the codebook, each code corresponding to a segment of the audio waveform and temporally aligned in the string with the corresponding segment of the audio waveform" was not clearly supported in further detail in the specification (see the specification page 18 line14-page 19 lines 23 for closest disclosure) nor in any claim.

Claim 48 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed limitation "computer readable program code means for causing the computer to represent the audio waveform with a string of codes from the codebook, each code corresponding to a segment of the audio waveform and temporally aligned in the string with the corresponding segment of the audio waveform" was not clearly supported in further detail in the specification (see the specification page 18 line14-page 19 lines 23 for closest disclosure) nor in any claim.

Claim 52 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed limitation "means for representing the audio waveform with a string of codes from the codebook, each code corresponding to a segment of the audio waveform and temporally aligned in the string with the corresponding segment of the

audio waveform" was not clearly supported in the further detail in further detail in the specification (see the specification page 18 line14-page 19 lines 23 for closest disclosure) nor in any claim.

Claims 35 and 54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed limitation "each code in the string represents the waveform over a portion of the waveform, and wherein the codes are temporally aligned with the waveform such that the position of a code within the string corresponds to a time period of the waveform" was not clearly supported in further detail in the specification (see the specification page 18 line14-page 19 lines 23 for closest disclosure) nor in any claim.

Claims 36 and 55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed limitation "compressing the string such that temporal alignment between the string and the waveform is maintained" was not clearly supported in further detail in the specification (see the specification page 18 line14-page 19 lines 23 for closest disclosure) nor in any claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 61-64 are rejected under 35 U.S.C. 102(e) as being anticipated by Bolle et al (US PAT. 6,675,174).

Consider claim 62, Bolle teaches an apparatus for fingerprinting an audio waveform, comprising:

a memory (see figs 1a,1b) operable to store a codebook (see fig.4a (420,430)) which represents a vector of one or more spectral features with a corresponding one of a plurality of codes (see col. 9 line 49 - col. 10 line 24); and

a processor (see figs. 1a,1b) operable to divide the audio waveform (see fig.9 (S(t)) into a plurality of bins (t_k), compute one or more spectral features for each bin, and represent the audio waveform (S(t)) with a string of codes from the codebook (420,430) based on the computed one or more spectral features for each bin (see col. 17 line 15 - col. 18 line 67).

Consider claim 61, it is a method claim of apparatus claim 62. See previous apparatus claim 62 for rejection.

Consider claim 64, Bolle teaches an apparatus for fingerprinting an audio waveform, comprising:

means (see fig. 4a, (420,430)) for defining a codebook which represents a vector of one or more spectral features with a corresponding one of a plurality of codes (see col. 9 line 49-col. 10 line 24);

means (see fig.9) for dividing the audio waveform (S(t)) into a plurality of bins(t_k);

means (408) for computing one or more spectral features for each bin; and

means (415) for representing the audio waveform with a string of codes from the codebook (420,430) based on the computed one or more spectral features for each bin (see col. 17 line 15 - col. 18 line 67).

Consider claim 63, it is a computer program product claim corresponding to apparatus claim 64. See apparatus claim 64 for rejection.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 30-33 and 48-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bolle et al (US PAT. 6,675,174) in view of Sherwood. (US PAT. 6,512,796).

Consider claim 30, Bolle teaches a method for fingerprinting an audio waveform, comprising:

defining a codebook (see fig.4a (420,430)) which represents a vector of one or more spectral features with one of a plurality of codes (see fig.9),

each code corresponding to a bin and representing a portion of a predetermined audio waveform (S(t)) ;

dividing the audio waveform into a plurality of bins (t_k), for each bin of the plurality of bins, computing one or more spectral features for the bin, wherein the computing comprises: computing (408) the one or more spectral features for a first group (W1) of data points within the bin; and

computing the one or more spectral features for a second group (W2) of data points within the bin (see col. 17 line 15-col. 18 line 67); and

representing the audio waveform with a string of codes from the codebook (420,430), each code corresponding to a segment of the audio waveform and inherently (because the codebook function in the memory) temporally aligned in the string with the corresponding segment of the audio waveform (S(t)) (see col. 18 line 40-col. 19 line 57); but Bolle does not clearly teach shifting some number of data points within the bin.

However, Sherwood teaches shifting some number of data points within the bin (see col. 8 line 53-col. 9 line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Sherwood into Bolle to provide an efficient method for converting a codebook function into a digital signature scheme.

Consider claim 48, Bolle teaches a computer program product comprising a computer-readable memory medium having control logic stored therein for causing a computer to fingerprint an audio waveform, said control logic comprising (see figs 1a,1b and col. 9 line 49-col. 10 line 24):

computer readable program code means (see fig.4a, (420,430)) for causing the computer to define a codebook which represents a vector of one or more spectral features with one of a plurality of codes (see fig.9), each code corresponding to a bin and representing a portion of a predetermined audio waveform (S(t));

computer readable program code means (see fig.9) for causing the computer to divide the audio waveform (S(t)) into a plurality of bins(t_k);

computer readable program code means (408) for causing the computer to compute one or more spectral features for a first group (W1) of data points within each bin of the plurality of bins(t_k);

computer readable program code means (406) for causing the computer to select some number of data points within each bin of the plurality of bins(t_k); and

computer readable program code means (408) for causing the computer to compute one or more spectral features for a second group (W2) of data points within each bin of the plurality of bins(t_k)(see col. 17 line 15-col. 18 line 67);and

computer readable program code means (fig.9) for causing the computer to represent the audio waveform (S(t)) with a string of codes from the codebook (420,430), each code corresponding to a segment of the audio waveform and inherently (because the codebook function in the memory) temporally aligned in the string with the

corresponding segment of the audio waveform (S(t)) (see col. 18 line 40-col. 19 line 57); but Bolle does not clearly teach shifting some number of data points within the bin within each bin of plurality of bins.

However, Sherwood teaches shifting some number of data points within the bin within each bin of plurality of bins (see col. 8 line 53-col. 9 line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Sherwood into Bolle to provide an efficient method for converting a codebook function into a digital signature scheme.

Consider claims 49-51, Bolle teaches one or more date points in the first group (see fig.9 (W1)) overlap with one or more data points in the second group (W2 and col. 17 line 15-col. 8 line 67); and each code is a hash code (see col. 4 line 37-col. 5 line 7), and compressing the string of codes from the codebook (see fig.4a, (420,430)) to form a compressed string, the codes of the compressed string and inherently (because the codebook function in the memory) temporally aligned with the corresponding segment of the waveform (see figs.9 and 10a and col. 20 line 18-col. 21 line 67).

Consider claims 31-33, these are method claims corresponding to computer program product claims 49-51. See previous computer program product claims 49-51 for rejection.

Consider claim 52, Bolle teaches an apparatus for fingerprinting an audio waveform, comprising:

Means (see fig.4a, (420,430)) for defining a codebook which represents a vector of one or more spectral features with one of a plurality of codes, each code corresponding to a bin and representing a portion of a predetermined audio waveform (see fig.9 S(t));

means (see fig.9) for dividing the audio waveform into a plurality of bins(t_k),

means (408) for computing one or more spectral features for a first group (W1) of data points within each bin of the plurality of bins(t_k);

means (406) for selecting some number of data points within each bin of the plurality of bins(t_k); and

means (408) for computing the one or more spectral features for a second group (W2) of data points within each bin of the plurality of bins(t_k)(see col. 17 line 15-col. 18 line 67); and

means (420,430) for representing the audio waveform with a string of codes from the codebook, each code corresponding to a segment of the audio waveform (S(t)) and inherently (because the codebook function in the memory) temporally aligned in the string with the corresponding segment of the audio waveform (S(t)) (see col. 18 line 40-col. 19 line 57); but Bolle does not clearly teach shifting some number of data points within the bin within each bin of plurality of bins.

However, Sherwood teaches shifting some number of data points within the bin within each bin of plurality of bins (see col. 8 line 53-col. 9 line 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Sherwood into Bolle to provide an efficient method for converting a codebook function into a digital signature scheme.

8. Claims 34-39, 46-47 and 53-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bolle et al (US PAT. 6,675,174) in view of Markandey (US 2002/0101989).

Consider claim 34, Bolle teaches a signature of an audio waveform, comprising:

dividing the audio waveform (see fig.9 (S(t)) into a plurality of bins (t_k);

for the plurality of the bins, selecting a first group (W1) of data points within each bin, and computing one or more spectral features for each bin based upon the first group of points within the plurality of bins(t_k),and for the plurality of bins(t_k), selecting (see fig.4a, 406) a second group (W2) of data points within each bin, and computing (408) one or more spectral features for each bin based upon the second set of data points within the bins(t_k) of the plurality; referencing a codebook (420,430) using the one or more spectral properties; and one or more signatures representing the audio waveform with a string of codes from the codebook, each code corresponding to a segment of the audio waveform (see col. 17 line 15-col. 18 line 67); Bolle does not clearly teach creating one or more signatures representing the audio waveform with a string of codes from the codebook.

However, Markandey teaches creating one or more signatures representing the audio waveform with a string of codes from the codebook (see page 2 [0023]-[0027]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Sherwood into Bolle to improve the data protection system.

Consider claim 53, Bolle teaches a computer program product comprising a computer-readable memory medium having control logic stored therein for causing a computer to a signature of an audio waveform, said control logic comprising (see figs, 1a, 1b and col.9 line 49-col. 10 line 24):

computer readable program code means (see fig.9) for causing the computer to divide the audio waveform (S(t)) into a plurality of bins(t_k);

computer readable program code means (see fig.4a, (406)) for causing the computer to select a first group (W1) of data points within each bin;

computer readable program code means (408) for causing the computer to compute one or more spectral features for each bin based upon the first group (W2) of points within the plurality of computer readable program code means (406) for causing the computer to select a second group (W2) of data points within each bin; computer readable program code means (408) for causing the computer to compute one or more spectral features for each bin based upon the second set of data points within the bins of the plurality;

computer readable program code means (420,430) for causing the computer to reference a codebook using the one or more spectral features; and

computer readable program code means (405) for causing the computer to create one or more signatures representing the audio waveform with a string of codes from the codebook, each code corresponding to a segment of the audio waveform ((S(t)) and see col. 17 line 15-col. 18 line 67); Bolle does not clearly teach creating one or more signatures representing the audio waveform with a string of codes from the codebook.

However, Markandey teaches creating one or more signatures representing the audio waveform with a string of codes from the codebook (see page 2 [0023]-[0027]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Sherwood into Bolle to improve the data protection system.

Consider claims 54-56, Bolle teaches that each code in the string represents the Waveform (see fig.9 (S(t)) over a portion of the waveform, and wherein codes are temporally inherently (because the codebook function in the memory) aligned with the waveform such that the position of a code within the string corresponds to a time period of the waveform (see fig.9 and col. 18 line 40-col. 19line 5); and compressing the string such that temporal inherently (because the codebook function in the memory) alignment between the string and the waveform is maintained (see fig.9 and col. 21 line 26-col.22 line 8); and comparing a signature of the one or more signatures that initiates at a given time with a representation of an audio segment (see col. 14 line 34-col. 15 line 21).

Consider claims 35-37, these are method claims corresponding to computer program product claims 54-56. See previous computer program product claims 54-56 for rejection.

Consider claims 57-59, Bolle teaches the computer program product (see figs. 1a,1b) of further comprising:

computer readable program code means (see fig.4a, (420,430) for causing the computer to define a codebook (420,430) which represents a vector of one or more

spectral features (see fig.9) with a code, prior to referencing said codebook (420,430 and fig.9 and col. 17 line 17-col. 18 line 67); and one or more signatures is created for each bin (see fig.9 and col. 17 line 15-col. 18 line 67); and each code is a hash code (col.4 line 37-col. 5 line 7).

Consider claim 58 Markandey teaches that one or more signatures is created for each bin (see page 2 [0023]-[0027]).

Consider claims 38-39 and 47, these are method claims corresponding to computer program product claims 57-59. See previous computer program product claims 57-59 for rejection.

Consider claim 46, Bolle teaches a method for creating a signature for an audio waveform, comprising:

dividing the audio waveform (see fig.9 S(t)) into a plurality of bins(t_k);

for the plurality of the bins(t_k), selecting (see fig.4a, (406)),a first group (W1) of data points within each bin,

and computing (408) one or more spectral properties for each bin based upon the first group (W1) of points within the plurality of bins (t_k) ,

and for the plurality of bins(t_k), selecting (406) a second group (W2) of data points within each bin, and

computing one or more spectral properties for each bin based upon the second set of data points within the plurality of bins(t_k);referencing a codebook (420,430) of hash values using the computed one or more spectral properties; and one or more signatures representing the audio waveform (S(t)) with a string of code values from the codebook

(420,430), each code value corresponding to a segment of the waveform (S(t)) and see col. 17 line 15-col. 18 line 67); but Bolle does not clearly teach creating one or more signatures representing the audio waveform with a string of hash values from the codebook, each hash value corresponding to a segment of the waveform.

However, Markandey teaches creating one or more signatures representing the audio waveform with a string of hash values from the codebook, each hash value corresponding to a segment of the waveform (see page 2[0023]-page 3[0041]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Sherwood into Bolle to improve the data protection system.

Consider claim 60, Bolle teaches an apparatus for creating a signature of an audio waveform, comprising:

means (see fig.9)for dividing the audio waveform (S(t)) into a plurality of bins;

means for selecting a first group (W1) of data points within each bin(t_k);

means (see fig.4a, (408)) for computing one or more spectral features for each bin based upon the first group (W1) of points within the plurality of bins(t_k);

means (406) for selecting a second group (W2) of data points within each bin;

means (408) for computing one or more spectral features for each bin based upon the second set of data points within the bins of the plurality;

means (420,430) for referencing a codebook using the one or more spectral features; and

means (405) for creating one or more signatures representing the audio waveform with a string of codes from the codebook, each code corresponding to a segment of the audio waveform ((S(t)) and see col. 17 line 15-col. 18 line 67); Bolle does not clearly teach creating one or more signatures representing the audio waveform with a string of codes from the codebook.

However, Markandey teaches creating one or more signatures representing the audio waveform with a string of codes from the codebook (see page 2 [0023]-[0027]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Sherwood into Bolle to improve the data protection system.

Response to Amendment

9. Applicant's arguments with respect to claims 30-39 and 46-64 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lert, Jr (US PAT. 4,677,466) is cited to show other related the Method and system for analyzing digital audio files.

11. Any response to this action should be mailed to:

Mail Stop ____(explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:
(703) 872-9306

Hand-delivered responses should be brought to:
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501 The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao,Lun-See LLS.
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 07-24-2006

XU MEI
PRIMARY EXAMINER